Rapporto di test n° TR_17336
Test report n° TR_17336

Immunità a transitori elettrici veloci
Electrical fast transient/burst immunity test

Rif: procedura di test IL 22011
Ref: test procedure IL22011

Dispositivo testato ***Tested sample***	COMPACT 32 500 M J1900 ACL MD SCL
P/N ***P/N***	993201600101
Modelli derivati ***Derived models***	/
Persone presenti ***Attendees***	/
Costruttore ***Manufacturer***	AESYS S.p.A. - Via Pastrengo 7c 24068 Seriate (BG) Italia Tel: +39 0352924111 www.aesys.com
Laboratorio ***Test laboratory***	AESYS S.p.A. - Via Pastrengo 7c 24068 Seriate (BG) Italia Tel: +39 0352924111 www.aesys.com
Data del test ***Test date***	04/12/2017
Prima emissione ***First issue***	04/12/2017

Tecnico di laboratorio ***Test engineer***	Sergio Fustinoni	……...
Responsabile di laboratorio ***LAB Manager***	Egidio A. Fogliata	……...
Revisione ***Revision***	00	Primo rilascio *First release*

Aesys S.p.A. • Headquarters: Via Pastrengo 7c - 24068 Seriate - Bergamo - Italy • T. +39 035 29240 • F. +39 035 680030 • www.aesys.com • email: info@aesys.com
Registered office: Via Artigiani 41 - 24060 Brusaporto - Bergamo - Italy • Management & Coordination by Aesys Holding S.r.l. • Share Capital € 5.000.000 fully paid-up
VAT Number • Tax Payer's Code • Registration no. at Trade Register in Bergamo 02052370166 • Registro AEE IT08020000001058

Sommario
Contents

1 DUT - INFORMAZIONI GENERALI 3
DUT - GENERAL PRODUCT INFORMATION 3
2 NORMATIVE DI RIFERIMENTO 4
REFERENCE NORMATIVE 4
3 PROCEDURA DI TEST DI RIFERIMENTO 4
REFERENCE TEST PROCEDURE 4
4 STRUMENTAZIONE UTILIZZATA PER IL TEST 4
USED TEST MEASUREMENT INSTRUMENTS 4
5 PARAMETRI DI TEST 4
TEST PARAMETERS 4
6 REGISTRAZIONE TEST 5
TEST RECORDING 5
6.1 IMPOSTAZIONE TEST 5
TEST SETUP 5
7 ESITO DEL TEST 6
TEST RESULT 6

Aesys S.p.A. • Headquarters: Via Pastrengo 7c - 24068 Seriate - Bergamo - Italy • T. +39 035 29240 • F. +39 035 680030 • www.aesys.com • email: info@aesys.com
Registered office: Via Artigiani 41 - 24060 Brusaporto - Bergamo - Italy • Management & Coordination by Aesys Holding S.r.l. • Share Capital € 5.000.000 fully paid-up
VAT Number • Tax Payer's Code • Registration no. at Trade Register in Bergamo 02052370166 • Registro AEE IT08020000001058

1 DUT - INFORMAZIONI GENERALI
DUT - GENERAL PRODUCT INFORMATION

The DUT (Device Under Test), named **COMPACT 32 500 M J1900 ACL MD SCL** is a variable message panel based on TFT technology used for video-information in railways applications.

DUT – COMPACT 32 500 M J1900 ACL MD SCL

DUT – Product identification label

Aesys S.p.A. • Headquarters: Via Pastrengo 7c - 24068 Seriate - Bergamo - Italy • T. +39 035 29240 • F. +39 035 680030 • www.aesys.com • email: info@aesys.com
Registered office: Via Artigiani 41 - 24060 Brusaporto - Bergamo - Italy • Management & Coordination by Aesys Holding S.r.l. • Share Capital € 5.000.000 fully paid-up
VAT Number • Tax Payer's Code • Registration no. at Trade Register in Bergamo 02052370166 • Registro AEE IT08020000001058

2 NORMATIVE DI RIFERIMENTO
REFERENCE NORMATIVE

All the tests are managed according the European standard **EN 50121-4**: *Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus.*

3 PROCEDURA DI TEST DI RIFERIMENTO
REFERENCE TEST PROCEDURE

The test was performed following the Aesys internal reference procedure named *IL 22011 Burst*.

4 STRUMENTAZIONE UTILIZZATA PER IL TEST
USED TEST MEASUREMENT INSTRUMENTS

Description	Model	Manufacturer	Serial n°	Calibration n°	Calibration date
Burst generator	Transient 2000	EMC Partner	832	ISO 00068/17	26/01/2017
Capacitive coupling clamp	CN-EFT 1000	EMC Partner	508	NA	NA

5 PARAMETRI DI TEST
TEST PARAMETERS

The test method is compliant to the requirements of standard **EN 61000-4-4:** *Testing and measurement techniques – Electrical fast transient/burst immunity test.*

Test setup: A ground reference plane copper with 0.5 mm thickness, is positioned on the laboratory floor .
The burst pulses are applied to the DUT power supply and data terminals.

Voltage peak: ± 2kV 5/50ns tr/th
Burst duration: 15.0ms
Repetition: 300ms
Spike frequency: 5 kHz
Test-time: 60 seconds

Environmental conditions :
Temperature range: 15°C to 35°C
Relative humidity: 25 to 75%
Pressure: 860 to 1060hPa

Test measurements uncertainty:
Amplitude: 0.05kV
Front time: 0.32ns
Time to half value: 3.5ns
Repetition rate: 0.08kHz

The measurement uncertainties stated in this document are estimated as extended uncertainty obtained multiplying the standard uncertainty by the coverage factor *k* corresponding to a confidence level of about 95%.

Aesys S.p.A. • Headquarters: Via Pastrengo 7c - 24068 Seriate - Bergamo - Italy • T. +39 035 29240 • F. +39 035 680030 • www.aesys.com • email: info@aesys.com
Registered office: Via Artigiani 41 - 24060 Brusaporto - Bergamo - Italy • Management & Coordination by Aesys Holding S.r.l. • Share Capital € 5.000.000 fully paid-up
VAT Number • Tax Payer's Code • Registration no. at Trade Register in Bergamo 02052370166 • Registro AEE IT08020000001058

6 REGISTRAZIONE TEST
TEST RECORDING

6.1 Impostazione test
Test setup

Test	Performance criteria	Result	Verdict
Environmental temperature	Between +15°C and +35°C	+24.3°C	**Passed**
Relative humidity	Between 25% and 75%	27%	**Passed**
Pressure	Between 860 and 1060hPa	1020hPa	**Passed**
Functionality	Correct operation and data communications	Dynamic image always displayed Correct data communication	**Passed**

Bursts are applied to the following ports, as determined by the standard **EN 50121-4**:

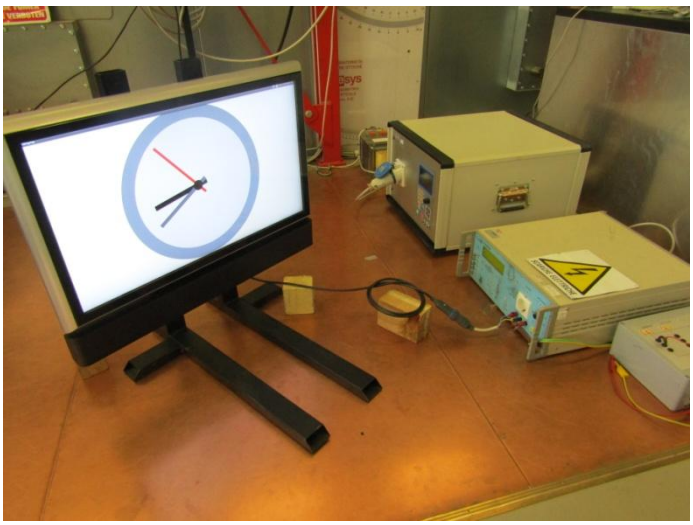
- Power port (line, neutral and earth)
- Communication data (I/O) port with CN-EFT 1000

Transients have the following characteristics:

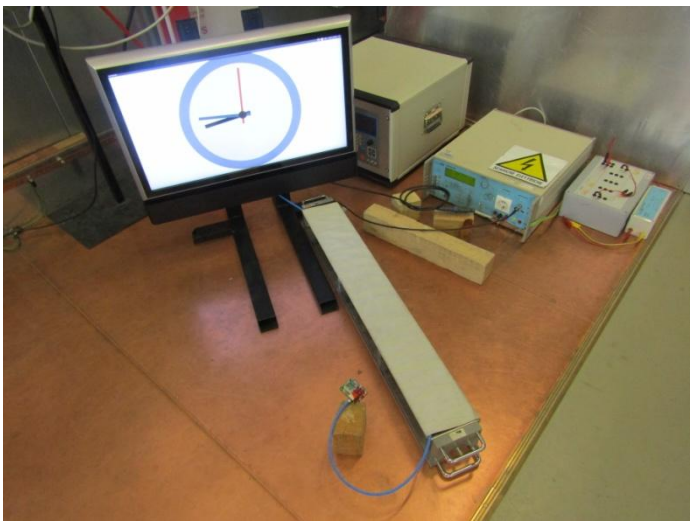
- Voltage of 2kV in positive and negative polarity,
- Duration of each transition 60 seconds.

Aesys S.p.A. • Headquarters: Via Pastrengo 7c - 24068 Seriate - Bergamo - Italy • T. +39 035 29240 • F. +39 035 680030 • www.aesys.com • email: info@aesys.com
Registered office: Via Artigiani 41 - 24060 Brusaporto - Bergamo - Italy • Management & Coordination by Aesys Holding S.r.l. • Share Capital € 5.000.000 fully paid-up
VAT Number • Tax Payer's Code • Registration no. at Trade Register in Bergamo 02052370166 • Registro AEE IT08020000001058

The test results passed if it meets the criteria for performance A, as specified by the normative **EN 61000-4-4**.



DUT during the test on power port



DUT during the test on communication data port (I/O) with CN-EFT 1000

7 ESITO DEL TEST
TEST RESULT

Test	Severity	Required	Result	Verdict
Burst on power port	± 2kV	Class A	Class A	**Passed**
Burst on communication data port (I/O)	± 2kV	Class A	Class A	**Passed**

FINE DEL TEST REPORT
End of test report

Aesys S.p.A. • Headquarters: Via Pastrengo 7c - 24068 Seriate - Bergamo - Italy • T. +39 035 29240 • F. +39 035 680030 • www.aesys.com • email: info@aesys.com
Registered office: Via Artigiani 41 - 24060 Brusaporto - Bergamo - Italy • Management & Coordination by Aesys Holding S.r.l. • Share Capital € 5.000.000 fully paid-up
VAT Number • Tax Payer's Code • Registration no. at Trade Register in Bergamo 02052370166 • Registro AEE IT08020000001058